

AMENDMENTS TO THE SPECIFICATION

Please amend the paragraph [0002] as follows.

[0002] The present invention relates to a method manufacturing a probe pin and a method for manufacturing a probe card. More particularly, the present invention relates to a probe pin formed of an amorphous alloy. ~~In addition, this patent application relates to the following Japanese patent application.~~ In respect of the designated states, which approve the incorporation by referring to the documents, the contents of the following Japanese patent application are incorporated in this patent application by reference.

Please amend the paragraph [0010] as follows.

[0010] The method for manufacturing a probe card may further include[[s]] a step of forming a conductive layer on a surface of the amorphous alloy layer.

Please amend the paragraph [0013] as follows.

[0013] The method for manufacturing a probe card may further comprise a step of dividing the probe pin forming substrate for each of the probe pins, wherein during the step of joining, the amorphous alloy provided on the probe pin forming substrate is divided and the transfer line are joined.

Please amend the paragraph [0024] as follows.

[0024] In addition, all of the free end parts 28 included in the plurality of probe pins 14 may not be equal in height from the substrate~~provided at the different height from the probe substrate 12.~~ Since the free end part 28 is provided at the different height, it is possible to press each of the free end parts 28 to the connection terminal with a desired force when the free end part 28 is in

contacted with the connection terminal. In addition, even if each of the connection terminals is provided at the different height, it is possible to press the free end parts 28 to the connection terminal with a desired force. Moreover, in another embodiment, since the inclined parts 26 of the plurality of probe pins 14 are provided to have different lengths, each of the free end parts 28 may be pressed to the connection terminal with a desired force.

Please amend the paragraph [0029] as follows.

[0029] Continuously, the amorphous alloy layer 60 deposited is heated. The amorphous alloy layer 60 is preferably heated until the temperature higher than the glass transition temperature of the amorphous alloy used for the material. In the present invention, the amorphous alloy layer 60 is heated until the ~~supercooled liquid temperature area~~temperature range for which the amorphous alloy layer is a supercooled liquid that is at more than the glass transition temperature of the amorphous alloy and less than the crystallization initiation temperature. After this, the amorphous alloy layer 60 is cooled less than the glass transition temperature by, e.g., cooling naturally.

Please amend the paragraph [0031] as follows.

[0031] In addition, since it is possible to alleviate the internal stress that occurs in the amorphous alloy layer 60 by heating the amorphous alloy layer 60 before removing the probe pin forming substrate, it is possible to alleviate the internal stress that occurs between the amorphous alloy layer 60 and other metal layers by accumulating the amorphous alloy layer 60 and other metal layers even when forming the probe pin. Further, it is possible to obtain the probe pin 14 having a desired shape easily.

Please amend the paragraph [0035] as follows.

[0035] In another embodiment, the holding end part 24 and the transfer line 64 may be joined directly without forming the joining member 62. In addition, ~~by heating and bonding at the supercooled liquid temperature area, the amorphous alloy layer may be heated at the supercooled liquid temperature area, and the holding end part 24 may be bonded to the transfer line 64 by thermal compression~~ by heating at the temperature range for which said amorphous alloy is a supercooled liquid. In addition, the probe pin forming substrate may be divided for each of the probe pins, and the probe pins 14 provided in the probe pin forming substrate divided may be joined with the transfer line 64 gradually.

Please amend the paragraph [0036] as follows.

[0036] Next, as shown in Fig. 2G, the first substrate 40 and the second substrate 50 for removing the first substrate 40 and the second substrate 50 that ~~constituting~~ constitutes the probe pin forming substrate are preferably removed by, e.g., wet etching using potassium hydroxide solution or dry etching using XeF₂.

Please amend the paragraph [0037] as follows.

[0037] In the present embodiment, since the probe pin forming substrate is removed after heating the amorphous alloy for forming the probe pin to the supercooled liquid temperature area and cooling it at a temperature lower than the supercooled liquid temperature area, the internal stress in the probe pin itself ~~does not almost occur~~ hardly occur. In other words, even after removing the probe pin forming substrate, it is possible to hold the shape of the probe pin having a desired shape at the time of being formed on the probe pin forming substrate.

Please amend the paragraph [0043] as follows.

[0043] And, as shown in Fig. 3E, a probe pin forming groove part having a V-shaped section may be formed on the probe pin forming substrate, wherein the probe pin forming groove part includes a first inclined surface part formed to have a first angle to the first plane part 42 and includes a second inclined surface part 98 formed from the first plane part 42 to the first inclined surface part 96 to have a second angle to the first plane part. In this case, the first angle and the second angle may be substantially the same angle. That is, the first inclined surface part 96 and the second inclined surface part 98 may be formed to have the same angle to the first plane part 42 and besides to have the reverse symbol of the angle. And, as shown in Fig. 3F, the amorphous alloy layer 60 is formed from the first plane part 42 over at least a part of the first inclined surface part 96 and the second inclined surface part 98. Since the probe pin forming groove part has a V-shape, it is possible to omit the step of forming the protrusion part.

Please amend the paragraph [0046] as follows.

[0046] Continuously, as shown in Fig. 4B, a peeling-off sacrificial layer 72 is formed over the adhesion layer 70 in order to make it easy to remove the first substrate 40 and the second substrate 50 from the probe pin 14 during the following process. The peeling-off sacrifice layer 72 is preferably formed of a material to endure heating or chemical treatment such as etching in regard to the amorphous alloy layer during the following process. The peeling-off sacrifice layer 72 is preferably a metal film. In the present embodiment, the peeling-off sacrifice layer 72 is formed to have the thickness of approximately 100nm including chrome.

Please amend the paragraph [0048] as follows.

[0048]As shown in Fig. 4C, the amorphous alloy layer 60 is formed over the peeling-off sacrifice layer 72. Next, as shown in Fig. 4D, the metal layer 74 is formed over the amorphous alloy layer 60. Further, the adhesion layer 76 for allowing the amorphous alloy layer 60 and the metal layer 74 to adhere may be formed over the amorphous alloy layer 60. If the amorphous alloy consists mainly of palladium in the adhesion layer 76, like the adhesion layer 70, the adhesion layer 76 preferably includes titan nickel alloy of which the composition rate is 1:1. If the amorphous alloy contains copper mainly consisting of palladium, the adhesion layer 76 may have a first adhesion layer including chromeium or titanium and a second adhesion layer including copper.